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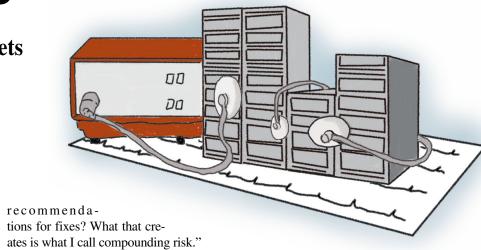# Always Up, Always On, Always Alive

Tips On Maintaining Your Data Center's Physical Assets

by David Garrett
• • •

MIKE HAGAN, senior vice president of Lee Technologies, has strong opinions about keeping a data center running.

As well he should. His firm maintains and staffs data centers for clients such as Microsoft, Earthlink, BellSouth, and the Pentagon, to name a few. And maintenance, he says, is one of the hardest tasks his clients face.

"If you look at a data center today, there's UPS, air conditioning, generators, PDUs, and it usually amounts to between 10 to 15 major pieces of equipment." Three to four preventive maintenance visits per year add up to 60 visits to manage. "Who's going to schedule them all?" he asks. "Who follows up on recommenda-tions for fixes? What that creates is what I call compounding risk."

To fight the problem, Lee Technologies devised TIMS, or Tiered Infrastructure Maintenance Standards, a proposed standard for data center maintenance for large and small centers alike. But whether you're running 10 servers or 10,000, you'll need expert advice on maintaining your infrastructure.

Power Management

Failing to maintain or test grounds is one of data center experts' most frequent mistakes, says Jeff Oakes of Sterling Oakes

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PC Planning

Buy A Computer For The Next Three Years

by John Brandon
• • •

IN MOST AREAS of IT, crystal ball gazing is not a recommended practice. It's too difficult to plan for a technology that may or may not exist in three years, and most experts who consult small and midsized companies will tell you to first examine your business needs today and then plan for the future. In fact, by examining current needs, it's often possible to predict (to some extent) the needs of tomorrow.

Yet, a recent comment by Lenovo product manager Stephen Miller seems to suggest the opposite: "Don't buy a computer for today; buy a computer for the next three years." While the logic of this quote might seem to contradict common business advice about your current needs dictating business plans, there's an underlying truth that reveals how markedly different a PC buying decision is from other purchases. The PC market is volatile and unpredictable, and trend forecasting is more difficult than, say, storage requirements or server usage over long periods.

Life Span

"You have to think about the average life of a computer, which is just a few years," says Howard Locker, chief architect for mobile and desktop computing at Lenovo, elaborating on the company position about SME PC purchasing decisions. "Upgrading is very difficult on both notebooks and desktops, so buying a PC that will last for three years makes more financial sense for most businesses."

Locker notes that the top four components in a computer to consider are RAM, hard disk capacity and speed, processor, and graphics. According to Locker, RAM is the top priority because it can have the greatest impact on computing speed for the majority of end users. He lists hard disk capacity and speed as second because it allows employees to do more with their computer down the road and won't limit them to certain activities, such as only working on business documents. He lists processing speed third because CPU horsepower is generally fast on most

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> ## "The most critical specification overall is: Will this system run Vista when it starts shipping next year."
> *- Gateway's Marc Demars*

In This **ISSUE**

COVER FOCUS
Maintenance & Upkeep

With so many tasks on your agenda, hardware maintenance and upkeep is often relegated to the back burner. That's why we've compiled simple, effective tips and expert advice for top data center products, covering what needs to be done, when it needs to be done, and how often.

TECH & TRENDS
Buy A Computer For The Next Three Years | 1

Most experts who consult small and midsized companies will tell you to first examine your business needs today and then plan for the future. Yet, a recent comment by Lenovo product manager Stephen Miller seems to suggest the opposite.

Flat File Systems | 29

CAS systems, aka flat file systems, because they lack a hierarchical directory structure, work by computing a unique hash or key for each file based on the actual contents of the file.

Four Tips For Better Backup | 30

We interviewed just over half a dozen backup and recovery experts and asked them to provide us with their best backup tips relating to speed, costs, and administration.

NEW PRODUCTS

Product Releases | 16

■ High-power servers are no problem for the new SL3 vertical power strips from **Aphel**. ■ **DPS-Arco** released the eSATA RAID+ continuous backup device. ■ **eIQnetworks** unveiled the latest version of its Enterprise Security Analyzer. ■ **EVault** introduced its new business continuity consulting management practice. ■ **Extensis** released an update to its Portfolio digital asset management software. ■ The FirePass 1200 is a new SSL VPN appliance from **F5**. ■ **Global Technology Associates** introduced the GB-3000 Gigabit Firewall Appliance for SMBs. ■ **Kemp Technologies** launched the LoadMaster LM-2500 balancing appliance. ■ **Overland Storage** announced REO Protection OS 3.0 for the company's REO SERIES disk-based backup appliances. ■ **Pulizzi Engineering** released a new line of power cables and accessories.

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1. What is the size of your company (how many employees)?
- ☐ Less than 10
- ☐ 10 - 99
- ☐ 100 - 199
- ☐ 200 - 499
- ☐ 500 - 999
- ☐ 1,000+

2. How often do you purchase computer hardware/software?
- ☐ Weekly
- ☐ Bi-weekly
- ☐ Monthly
- ☐ Quarterly
- ☐ Annually
- ☐ No Involvement

3. What is your annual computer hardware/ software purchasing budget?
- ☐ $0 - $9,999
- ☐ $10,000 - $24,999
- ☐ $25,000 - $49,999
- ☐ $50,000 - $99,999
- ☐ $100,000 - $249,999
- ☐ $250,000 - $499,999
- ☐ $500,000 - $999,000
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Intel, AMD Cut Processor Prices

CONTINUING THE FIERCE competition between AMD and Intel, the two companies recently made significant changes in prices for their processors. The price cuts should result in lower prices for desktops and notebooks within the next few months. The biggest Intel price cuts were in its desktop chips, with many chip prices being dropped 40% to more than 60%. Prices for Intel's server and workstation processors were unchanged, and notebook processor prices dropped slightly. AMD also cut prices on both notebook and desktop chips; desktop processors were dropped by as much as 57%, while prices for notebook chips dropped by as much as 26%.

Avaya Names New CEO, Posts Profits

LOUIS D'AMBROSIO will become Avaya's new president and CEO, replacing current Chairman and CEO Donald Patterson. The move came as Avaya announced earnings that were significantly lower than a year ago. During the quarter ended June 30, Avaya earned $44 million, or 10 cents per share, compared to $194 million, or 41 cents per share a year ago. D'Ambrosio says much of Avaya's future success will rely on its strength in the VoIP market. The company's IP line shipments increased more than 20% during the past quarter.

Symantec Posts Q1 Earnings

LARGELY DUE TO INCREASING operating expenses, which rose to $824.1 million during a recent quarter from $350.8 million last year, Symantec reported a drop of 52% in its fiscal first quarter profit, from $199 million in Q1 last year to $95 million this year. Symantec's earnings per share was 9 cents, down from 27 cents a share. However, the company beat Wall Street estimates in revenue, which increased from $699 million last year to $1.26 billion. The revenue breakdown showed 38% from security and data management business, 30% from consumer business, and 27% from data center management business.

Sun Revenue Beats Projections

SUN MICROSYSTEMS' revenue for the previous quarter jumped 29% to $3.83 billion, well above the expected average of $2.13 billion. However, the company lost $301 million, or about 9 cents per share, primarily because of restructuring charges and costs related to about 5,000 job cuts. The company had encouraging news, though, with its overall server shipments increasing about 15% during the past quarter. Sun CEO Jonathan Schwartz says, "Of the systems we distribute, 60% went to customers who never have done business with Sun before. It is safe to say we have entered a new era, where we are attracting new customers."

HP Buys Mercury Interactive

HP PLANS TO PAY $4.5 BILLION, or $52 per share, to acquire Mercury Interactive, a software maker specializing in IT governance and testing products. Mercury's line of tools will fit into HP Software, which HP predicts will have revenue of $2 billion annually with Mercury's additions. HP says it believes the acquisition will help it be a stronger competitor to rivals CA and IBM; the deal is slated to close in the fourth quarter.

BSA Collects $2 Million In Settlements

THE BSA (Business Software Alliance) announced last week that it has collected settlements totaling more than $2 million from 19 U.S. companies that were using illegal copies of software. The BSA is a watchdog group that represents the country's largest software manufacturers. The companies involved in the settlement agreed to delete any unlicensed software, buy appropriate replacements, and enhance software management practices in addition to making the payments. According to the BSA, companies can be fined up to $150,000 for each copied software title.

Google Lags In China

GOOGLE RANKS THIRD among search engines in China, according to research from Analysys International. During the first quarter of this year, Google had a 13.2% share of the market, well behind Baidu.com's 43.9% share and Yahoo! China's 21.1% share. China's search engine market was worth about $37.7 million during the quarter. Google says 42% of its total revenue comes from outside the United States, although it doesn't break down that revenue by country.

India Still An Attractive Outsourcing Option

INDUSTRY ANALYSTS REPORT that many companies still consider India an attractive option for outsourcing, despite warnings from Indian outsourcing firms Satyam Computer Services and Wipro that quarterly profit margins could be hurt by salary increases. Specifically, Forrester says salaries for Indian staff who work in the IT services delivery arena are rising an average of 12 to 15% per year. India has a competitive advantage over other countries partly because it turns out such a high number of software engineering graduates each year. Accenture, Capgemini, and IBM are among the global companies expanding operations in India.

Click Fraud Settlement Given The OK

A $90 MILLION SETTLEMENT between Google and advertisers was approved by a judge in Arkansas last week. The advertisers have claimed that Google billed them incorrectly for ad clicks that weren't from legitimate customers interested in their products. The settlement was called "fair, reasonable, and adequate" by Judge Joe Griffin of the Miller County Circuit Court. Although advertisers won't receive a cash payment as part of the settlement, they will receive credit toward advertising that's equivalent to a $3.80 refund for every $1,000 spent on advertising during the last four and a half years.

IBM Changes Software Pricing

IBM HAS CHANGED its pricing scheme, so software pricing better reflects new technologies, such as multicore processors and virtualization. The change, which began last week, will charge customers based on "processor value units" instead of actual processors. Although actual prices won't change initially at IBM, the way customers are charged will change. So, for example, instead of purchasing a single software license, a customer will now have to purchase 100 processor units for a single-core system and 200 processor units for a dual-core system.

Cisco VPNs Vulnerable To DoS Attacks

THE IKE (Internet Key Exchange) Protocol used by the VPN 3000 Series of concentrators by Cisco has a flaw that could leave the devices vulnerable to DoS attacks. The IKE Protocol enables remote IPsec VPN access. A hacker could potentially overwhelm a VPN 3000 Series concentrator with IKE requests, so it was unable to handle legitimate traffic. The vulnerability was discovered in July 2005 by Roy Hills, security researcher at NTA Monitor, and posted on the Full Disclosure mailing list last week.

New CFO At CA

SOFTWARE VENDOR CA has appointed Nancy Cooper to be the new chief financial officer. She will replace Bob Cirabisi, who has been filling in since Bob Davis left the position in May. Cooper was previously CFO at IMS Health, a medical business intelligence firm; Reciprocal, a digital rights management company; and Pitney Bowes Credit, a credit firm. Cooper joins CA at a pivotal time: Due to complications with subscription revenue accounting and employee stock options granting, CA delayed filing its Q4 and fiscal 2006 results for the second time. Although there are rumors of layoffs, CA has not commented on them.

WATCH THE STOCKS

This information provides a quick glimpse of current and historical stock prices and trends for 16 major companies in the technology market.

Company	Symbol	Year Ago	July 24 $	July 31 $	% change from previous week
Avaya	AV	$10.50	$10.54	$9.26	▼ 12.14%
BEA Systems	BEAS	$9.06	$11.89	$11.74	▼ 1.26%
Computer Associates	CA	$29.17	$19.92	$20.96	▲ 5.22%
Cisco Systems	CSCO	$19.18	$17.95	$17.88	▼ 0.39%
Dell	DELL	$41.36	$20.75	$21.68	▲ 4.48%
Electronic Data Systems	EDS	$19.71	$22.83	$23.90	▲ 4.69%
Google	GOOG	$296.93	$390.90	$386.60	▼ 1.1%
HP	HPQ	$24.78	$31.07	$31.91	▲ 2.7%
IBM	IBM	$83.87	$75.99	$77.41	▲ 1.87%
Intel	INTC	$27.06	$17.48	$18	▲ 2.97%
McAfee	MFE	$28.90	$23.37	$21.55	▼ 7.79%
Microsoft	MSFT	$25.72	$24	$24.06	▲ 0.25%
Oracle	ORCL	$13.84	$14.98	$14.97	▼ 0.07%
Red Hat Software	RHAT	$15.39	$24.44	$23.68	▼ 3.11%
Sun Microsystems	SUNW	$3.87	$4.02	$4.35	▲ 8.21%
Symantec	SYMC	$23.30	$15.60	$17.35	▲ 11.22%

NOTE: This information is meant for reference only and should not be used as a basis for buy/sell decisions.

Disk-To-Disk & Tape-To-Disk

While Disk Is Making Lots Of Noise As A Backup Contender, Tape Just Won't Go Away

by Paul Ferrill

• • •

BACKUP HAS GOT TO BE one of the least favorite chores for most IT administrators. It's something that has to be done well, and if it isn't, it could cost you your job. Many companies have looked at everything from completely automated systems to remote backup services to make the job easier.

Tape-based backup systems have been the primary means of protecting important data for almost as long as computers have been around. While the form factor and storage capacity has made it possible to store more with less, the basic process hasn't changed much at all. Load a tape, copy your data to it, and store the tape some place safe.

Automation is not a new game either. Robotic tape loaders have been around for more than 20 years. Mechanical autoloaders make it possible to queue up a stack of tapes to handle most of the tape changing tedium. Higher capacity tapes mean you don't have to change tapes as often. All these improvements help but still don't seem to meet every need.

Ways & Means

Today's technologies offer a number of viable ways to solve the backup problem. As with any technology, it often comes down to time and money. There are some companies that offer near-instantaneous recovery through hot failover-type systems. If you really need that type of system, you probably have the money to pay for it.

Disk-to-disk backup systems are really nothing new. The simplest form is disk mirroring where you configure two identical disks or disk subsystems to write identical copies of data to both. If one fails, you replace it and rebuild the mirror. It's essentially the same as RAID 1. While disk mirroring might not qualify as a true backup solution in that it doesn't save a copy of your data, it does meet the reliability needs for many situations.

One way to measure any solution is the amount of time it takes to complete the backup process. This is often referred to as the "backup window." For some types of applications you must temporarily suspend operation to access files that would normally be locked for exclusive use. If those are important database files, the backup window time can become critical. Disk-to-disk systems offer the fastest backup speeds and the shortest backup window possible.

Idealstor

As disk-drive costs continue to decline, many companies are beginning to look at using removable disks as their primary backup medium. Idealstor positions its products to replace tape by using any brand IDE or SATA disk as the target for a backup. Each disk is configured to be physically ejected once the backup operation has been completed and then stored locally or taken offsite.

The Idealstor Backup Appliance runs Microsoft's Windows 2000 (1- and 2-bay models) or Windows

2003 Server (4-, 6-, and 8-bay models) and becomes the host for a client's backup software. No extra backup server is required. Each appliance comes with Gigabit Ethernet and can handle speeds at an average of 1.2GBpm. Tape is offered as an option for customers that need it.

FrankeNAS is a hybrid between the Idealstor Backup Appliance and a fully redundant RAID 5 storage device. FrankeNAS addresses the needs of nearline data storage and offsite archival using disk to do both. Capacities range from 500GB to 2TB of native RAID 5 storage with one to four removable drive bays offering 100GB to 2TB of disk backup in a 4U chassis.

For companies that want to roll their own, it offers Ibac Data Protection software for direct-to-disk backup. Data is kept in native format, making the restore process a simple drag-and-drop operation. Additional modules let Ibac handle open file backups, server failover, bare metal restore, and versioning.

Intradyn

While many of the higher-end disk-to-disk products are targeted at large enterprises, Intradyn offers products that even small businesses can afford. Intradyn's RocketVault product delivers some features you'd normally

find only on much costlier equipment. RocketVault is the product name for a line of storage appliances starting with the Mini (toaster-sized) and going up to multiple rack-mounted units.

RocketVault is designed to be a functional plug-and-play device, simple to set up and maintain. The Web-based administration tools are intuitive and can be accessed from virtually anywhere. RocketVault works well for companies with distributed remote offices looking for a WAN vaulting solution. RocketVault can also be configured as a virtual tape library.

ComplianceVault is Intradyn's tape-based product targeted at

organizations needing to meet certain regulatory requirements for data archiving and retrieval. Intradyn has a strategic partnership with Sony to use AIT drives configured for WORM (write-once, read-many) operation. This makes it possible to write critical data such as email to a media that can't be altered.

Overland Storage

The REO series from Overland Storage is a disk-based appliance that looks like either a virtual tape library or disk volume to the host system. It's possible to configure a single REO with up to 32 virtual tape drives, 180 virtual tape cartridges, and four library partitions. The REO also supports up to 64 LUNs (disk volumes). REO integrates well with existing iSCSI or Fibre Channel networks and is simple to configure.

The built-in REO software provides a core set of volume and device virtualization, connectivity, and management tools. REO delivers high-end performance for greatly reduced backup times and near-instantaneous recovery. REO models start with 1TB of raw capacity and can be expanded up to 44TB.

Tape is still the preferred media for most companies when it comes to long-term storage. Overland offers its NEO series tape libraries as either a standalone backup solution or in conjunction with its REO products for a disk-to-disk-to-tape solution. It has just recently introduced an entry-level ARCvault tape product targeted at the SME market or as a remote office solution.

Revinetix

Sentio is the Revinetix product name for its appliance providing backup for an entire LAN. Sentio

is based around a proprietary operating system, RevOS, and a client-side application, making it possible to accomplish bare metal recovery of an individual user's system partition. RevOS also supports offsite mirroring to another Revinetix appliance for additional protection.

Revinetix uses its trademarked Disk2Disk2Disk technology to archive critical data to removable SATA disks for offsite storage. It also supports standard external USB drives as a target backup

medium. Sentio incorporates data compression to cram more data into the available disk space.

Revivio

The Continuous Protection System model 1200 is Revivio's entry into the high-end data protection market. Revivio uses patent-pending technology to provide instant access to all volumes used by an application as they existed at any previous point in time up to the limits of your online storage. This type of system virtually eliminates any backup window, as the data typically does not need to be restored from tape.

One design feature of this type of system is that the storage sits outside the normal application data path and does not affect performance in any way. Revivio's solution is block-based, meaning it functions outside the normal file system. It also provides specific application support modules for databases, Microsoft Exchange, Lotus Notes, and others.

Buying Tips

Make a determination of how time critical your data is. In the case of a failure, how quickly do you really need that data back online?

How much of your critical data do you need to restore as quickly as possible? For high-volume Web sites, that could mean everything. Email might not be as critical.

Know what regulatory compliance measures you must meet. Tape works best for creating a nonalterable backup copy of archived email.

Don't forget the cost of labor when you analyze the difference between systems.
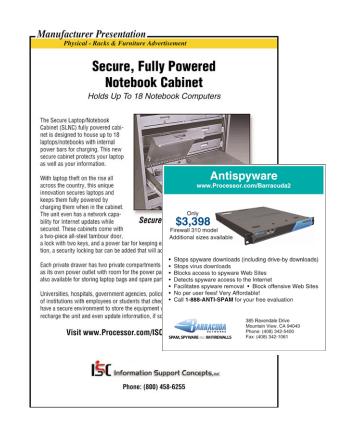
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Communications
Network Security, Routers, Storage Networking, Switches, Telephony, Wireless

Physical Infrastructure
Cabling, Environmental Controls, Fire Protection, Power Distribution, Racks

SHOWCASE
SOLUTION INDEX

Communications Maintenance & Upkeep

How To Keep Data & Voice Traffic Flowing Flawlessly

by Christian Perry

• • •

COMMUNICATIONS equipment forms the lifeblood of the enterprise, but the efficient exchange of voice and data between employees, departments, buildings, and other entities—including customers—can grind to a halt if that equipment isn't working as it should.

But with proper upkeep and maintenance of routers, switches, telecom devices, and other equipment, communication can flow continuously without serious hiccups. A proper maintenance regimen can vary depending on company size, number of devices, and type of devices, but regardless of the environment, it should never be ignored.

When communications equipment isn't properly maintained, companies can encounter downtime caused by bugs or glitches, or worse, they can be forced to deal with equipment that outright fails. When lines of communication evaporate, company processes are broken, which could send customers seeking business elsewhere.

Routers & Switches

According to Runi Ngim, a technical support engineer for Zultys Technologies, preventive maintenance and the process of keeping devices up-to-date are subjective measures. "Some administrators choose not to perform preventative maintenance or schedule routine maintenance until there's a need to upgrade, such as fixing [a] problem they encountered," Ngim says. "Others may choose to perform preventative maintenance periodically—maybe every six to 12 months."

That schedule might vary depending on the age of the equipment, Ngim says, because maintenance or diagnostics on newer equipment might not need to be performed as often as what older equipment requires. Preventive maintenance, which includes hardware diagnostic tests, is performed to prevent unexpected hardware failures that can be difficult to remedy. Ngim says that the availability of hardware diagnostic tools might be limited to a vendor's particular brand, models, or software version, and companies should check equipment manuals for details on the equipment.

Preventive maintenance also includes implementing software upgrades, which generally requires more regular attention than diagnostics. "Routers and high-grade switches need firmware updates to fix bugs and to add new functionality," says Dale Laushman, founder and CTO of The Uptime Group, an IT and VoIP consultancy. "We determine what patches and feature sets impact our equipment and make a decision on whether or not to upgrade from there, while keeping uptime as high as possible."

Laushman notes that while some installations never require software upgrading, it's nonetheless a good idea to stay on top of the upgrade process. Manufacturers generally release firmware updates at least every six months for new products, but that schedule can trickle down to once per year after products have floated around in the marketplace for a few years.

Routers and switches also require occasional physical maintenance, particularly to ensure their environment is constantly supporting ideal operating conditions. "Our primary concerns are heat and electrical conditioning, ensuring [equipment] is being maintained at a temperate environment and not being subject to extreme temperatures," says Steve McDonald, CIO of OHC, a holding company for Optimus Solutions, Canvas Systems, and Optimus Consulting. "We also keep dust and particle debris to a minimum for the sake of moving parts."

McDonald's company performs quarterly inspections of its routers and related equipment, ensuring that air is passing through equipment as intended. If dust or debris is discovered during an inspection, technicians remove the blockage using a dry dust rag or a small vacuum cleaner.

Telecom Equipment

When it comes to telecom equipment, maintenance depends entirely on the types

Most Important Tip

Thanks to an overwhelming lack of moving parts, communications equipment requires only occasional physical maintenance to keep devices in peak condition. However, that doesn't mean you're otherwise out of the woods because there's another maintenance aspect that can spell disaster if ignored.

"As a preventative measure, it is extremely important to stay current on all software releases or patches, as some bugs may or may not occur on all equipment with the same software releases," says Runi Ngim, technical support engineer, Zultys Technologies.

Spic & Span In The Data Center

Keeping Your Servers & Equipment Clean

by Chris Jackson

• • •

DATA CENTERS are often portrayed by Hollywood as sterile, antiseptic rooms that show nary a speck of dust. Servers are glittering boxes whose shimmering lights evoke a spacecraft headed for the frigid wastes of Mars. Try as they might to ignore it, data center managers and system administrators are well aware of the build up of dirt and grime on their systems. Prudent cleaning of servers, workstations, monitors, and KVMs not only helps these devices look better but also function better.

Cautionary Tales

According to Bill Montgomery of Premier Solutions, roughly 20% of his clients take advantage of his equipment cleaning service as opposed to data center cleaning. Many of his customers like to perform their own cleaning, while some don't have any cleaning done on their systems.

One of the main reasons companies avoid cleaning their systems is fear, says Montgomery. Applications that run in data centers tend to be vital business systems that can't incur any downtime. IT managers fear that either hiring a cleaning service or performing the cleaning in-house would involve unnecessary risk.

Inappropriate cleaning can cause problems, according to Montgomery. Poorly trained personnel using the wrong techniques and tools can seriously damage a server or workstation or disable a KVM. In Montgomery's experience, there's no serious danger when cleaning is conducted in a deliberate, careful, and uninterrupted manner by trained personnel.

When the opposite occurs, havoc is sure to follow. Horror stories abound of servers that failed after static electricity damaged circuit boards, internal vacuuming loosened internal components, and liquid cleaners damaged keyboards.

Imposing Order

Despite the many risks involved in cleaning data center end nodes, many companies do undertake the task on a regular basis. There are two general reasons for conducting periodic cleaning: keeping the equipment operating properly and instilling a sense of order and cleanliness.

A sociology theory known as the "broken window" syndrome illustrates the value of keeping up the appearance of your data center. When a window in a neighborhood is broken and left unrepaired, it signals a lack of care and respect. Eventually, more broken windows will be left unrepaired, trash will accumulate, and the neighborhood will turn into a slum.

This theory also has its place in the data center. The idea is that if servers are kept clean, keyboards cleared of debris, and monitors wiped of fingerprints and food, IT staff members will take better care of their systems.

Let The Professionals Do It

If you're unsure about your staff's ability to safely conduct periodic cleaning, there are many companies available that can keep your equipment clean. Because companies such as Premier Solutions use trained personnel who perform these tasks on a daily basis, they know how to use the tools and supplies properly.

Montgomery recommends that companies perform routine cleaning on a semi-annual basis. If your equipment is building up debris despite a semiannual cleaning cycle, you'll want to bring it to the attention of your facilities manager, as well as your IT staff. Proper air filtration in the data center should be limiting the amount of airborne contaminants, and IT personnel should be prohibited from introducing food debris.

Cleaning Tools

Proper cleaning requires the appropriate tools and materials. One of the most important tools is a vacuum that utilizes a HEPA (high-efficiency particulate air) filter. This helps to prevent the recirculation of dust into your data center environment. According to Premier Solutions, some of the best on the market are those from Nilfisk (www.pa.nilfisk-advance.com). For cleaning wipes, Montgomery believes there's no better source than 3M (www.3m.com). He recommends using a two-wipe system with one wipe holding the cleaning solution, and the second being a microfiber wipe for finishing off the display.

Cleaning Procedures

Cleaning servers and workstations should be limited to front bezels and rear fan exhausts, Montgomery says. Cleaning these should be done with a vacuum equipped with a soft crevice tool with the vacuum set at a low power setting. The aim is to

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Always Up, Always On, Always Alive

Continued from Page 1

Services. Oakes is a power expert who formerly worked for Liebert and before that was one of Compaq's first 100 employees.

Too often grounds carry a current because people reverse neutrals by mistake, he says. But without proper grounding, surge suppressors can fail, and you'll have little or no lightning protection, too. "You need to make sure that your ground is just a ground. If I get more than 5 amps in a ground, I get nervous."

Sage Wisdom

How much time have you spent on your DR (disaster recovery) plan? How much money? What about your redundant systems and generators? They're all needed, but Lee Technologies' Mike Hagan makes an important—and provocative—point about extreme problems.

It's unlikely you'll be hit by a dirty bomb or suffer a power outage that lasts for days. But zinc whiskers, faulty grounds, or flawed cabling are common and can take your data center out just as quickly. Have you given your maintenance plan the same time and money you've spent elsewhere?

Five Quick Tips

Jeff Oakes of Sterling Oakes Services offers these tips for effective power maintenance:

- Make sure all your fans are working properly. Replace them if needed.

- Check and replace the capacitors on your UPS if needed.

- Check for discolored wires or equipment. They're a leading sign of problems.

- Within a device itself, take apart connections and make sure there's nothing growing on them.

- Take a holistic approach: "You need to look at the facility as a whole. You need to know what it is that you're trying to protect" and where its critical points are, Oakes says.

Oakes also tells clients to monitor power 24/7. It's expensive, but it gives them real-time views of their problems. If you're on a more stringent budget, you can check your power systems once every six months, using the exams to establish a baseline.

And while you're at it, don't forget to check your generator. All too often it sits and waits for a crisis, only to fail. For maintenance, Oakes reviews a generator's factory specs (such as its worst-case voltage) then tests it at 25%, 50%, 75%, and 100% loads, looking for frequency, voltage, and waveform response. He also runs two- to three-hour tests to ensure the machine can withstand a long outage.

HVAC

Your cooling system is also crucial. For maintenance, Oakes suggests thermal cameras to check for hot spots. Check monthly or after moving racks because rack movement can reroute thermal flows. Cameras for preventive maintenance include Fluke's IR FlexCam family (us.fluke.com), Entherm's IRISYS IRI-1011 Thermal Imager (www.entherm.com), and FLIR Systems' PM Series ThermaCAM (www.flir.com).

If you do have a problem or if you think more cooling will help, try a portable cooling unit. According to Clark Michel of Atlas Sales & Rentals, a portable cooling unit "keeps you operational," and depending on the size of your data center, "it cools the whole room for you." Atlas equipment can be used for primary, supplemental, or redundant cooling for short-term, long-term, or maintenance.

Fire Protection

Lance Harry, Fenwal Protection Systems' business development manager and a licensed engineer, splits the maintenance of fire protection systems into three categories. The first is for water-based systems, such as sprinklers. Here maintenance is minor, with valve checks and flow tests at least once per year. (Often those tests are mandated by law.)

If you own a more advanced system, such as one combining air sampling with sprinklers, then maintenance depends largely on the manufacturer's advice. For instance, you'll have to check your system's filters at regular intervals. But Harry says it's the system's circuitry that truly matters. "The electronics are the things you're most interested in," he notes, adding that a system where the alarm can't trigger the sprinklers is dangerous.

If you have a true suppression detection system with water for backup (a system that employs a chemical agent), then maintenance is more involved because there are more components, agents, and piping systems. "We recommend biannual service," says Harry, whose company can perform inspections onsite. Such tests are involved, checking everything from the pressure gauge to the cylinders' control heads.

But one thing that rarely has to be fixed is the chemical agent itself because it can have a long shelf life. FM-200, which Fenwal employs in its systems, rarely needs to be replaced. "The things that become most time-dependent," says Harry, "are mostly the hardware."

Flooring

Lee Technologies' Hagan notes that flooring is a special problem in data center maintenance—not the floor itself, but what's under it. Because the plenum is unseen, it's often forgotten, leaving debris to build up and penetrate your data center from below.

Rich Hill, president of Data Clean, writes in a white paper that one such problem is zinc whiskers, which "could be growing right inside your computer room."

Zinc whiskers are growths that occur on zinc-electroplated products, such as the panels in raised floors. Once a single whisker grows to 500 microns, it can wreak havoc on your servers, causing short-circuits and failures. According to Hill, warning signs include odd, hard-to-explain hardware problems, especially with power systems and disk drives, and problems that get worse when you open a raised floor or move equipment around on top of it.

If you think you have zinc whiskers, call an expert because merely lifting a floor panel to check can send whiskers flying into the air. How you remove them and how often you check for a relapse should be determined by a professional.

Cabling

Whether it's a power supply, a server, or a router, each device in your data center is connected to at least one other. That's a lot of cables to maintain.

Panduit, maker of cable management tools, believes that maintenance is part and parcel of good cable management. Cable managers not only keep things neat but protect wires, too, by guarding against sharp bends that can degrade your investment over time.

But Jay Nakomoto, president and CEO of Cable Masters, notes that well-laid cables rarely cause problems. "There's little or no maintenance," he says. If something does go wrong, then you can rely on the manufacturer's warranty to recoup your investment. An expert will vet the problem and send a report to the manufacturer, which in turn reviews it and certifies the warranty if a defect is to blame.

Most Important Tip

No matter what you do to maintain your data center's infrastructure, do it often. Why? Because maintenance is too often ignored. Once a system is up and running, data center experts move on to the next crisis, forgetting that poor maintenance is second only to human error in causing downtime.

"You've got to maintain [your systems] religiously," says Jeff Oakes of Sterling Oakes Services. "Otherwise, you'll have trouble."

PC Planning

Continued from Page 1

new systems, although he did note that CPU caching is a critical spec. Last, graphics performance is important because of the much higher Vista requirements.

A Few Considerations

"The most critical specification overall is: Will this system run Vista when it starts shipping next year," says Marc Demars, a senior manager for product planning at Gateway. "Small and midsized companies will migrate faster over the next two to three years, so it's important to study the requirements closely. It's also important to consider whether the motherboard will run Vista, whether integrated graphics will suffice, and then look at processor speed and graphics performance."

Microsoft has made the planning process easier by releasing full Vista requirements online at www.microsoft.com/windows vista/getready/capable.mspx. This site makes a few recommendations for processor speed (at least 1GHz), RAM (1GB or more), and graphics (128MB of memory). Roger Kay, president of Endpoint Technologies, a data center consulting group, recommends buying a PC with "the lowest processor in the silicon vendor's premium line, such as the cheapest P4 or Athlon 64."

Kay also recommends looking first at form factor (notebook vs. desktop) as a top priority because it can dictate how the PC is used. "People supplying task workers or who want flexibility to fiddle with their systems or who want the highest performance should choose a desktop. Anyone else should consider a notebook."

Lenovo's Locker concurs, suggesting two main reasons to consider a desktop. A desktop generally lasts longer due to how a notebook is sometimes mishandled and damaged in the field. Secondly, a desktop costs less to support, due to the ease of repairs and fewer complications with built-in wireless networking and internal battery. "In most cases, if it's a knowledge worker who needs 24/7 usage, or if the PC will be shared among users, then a notebook makes the most sense," he says.

After form factor, Kay lists technical support costs and quality and then system price as top priorities. He suggests determining the required specifications for notebooks and desktops and then calling in bids from at least three vendors. He says the bid process should be short and focused, instead of a lengthy, time-consuming endeavor.

One other critical issue in the buying decision, especially when the goal is to make a system last for three years, is to research where the price break-off point is for various PC parts. For example, 1GB of RAM in a notebook is now reasonably priced compared to last year, but a system equipped with 4GB of RAM is much more expensive. Locker notes that you can usually spot the break-off point quite easily by studying the customization sections of a manufacturer's Web site, looking for price jumps between one level (for example,

Most Critical Specifications

Motherboard: Should support Windows Vista

Graphics: Should support at least DirectX 9 and have 128MB of memory

RAM: At least 512MB, but 1GB of memory is now reasonably priced

Hard disk: At least 7,200rpm speed and 120GB capacity

CPU: Buy the lowest speed in the premium CPU line

Form factor: notebooks for knowledge workers; desktop to save on repairs and maintenance

Windows Vista Recommended Specifications

- 1GHz 32-bit (x86) or 64-bit (x64) processor

- 1GB of system memory

- A graphics processor that runs Windows Aero

- 128MB of graphics memory

- 40GB of hard drive capacity with 15GB of free space

- DVD-ROM drive (integral or external)

- Audio output capability

- Internet access capability

SOURCE: WWW.MICROSOFT.COM

120GB hard disk) vs. another (250GB hard disk).

Other PC buying variables, such as lease or buy and resale value, depend more on the company cash flow and long-term financial planning. Most companies should look closer at future usage. "Someone who only edits Word documents now could end up making business videos down the road," says Demars.

Communications Maintenance & Upkeep

of equipment used by a company. For example, Laushman says that many multiplexers and other solid-state telecom devices are particularly well-designed and thoroughly tested because the equipment was designed by telecom engineers for phone companies. These devices require very

few firmware updates and need occasional careful removal of dust from their chassis. Proprietary switches and PC-based telephony equipment, on the other hand, require more complex maintenance duties.

"For example, a PC-based IVR [interactive voice response] unit has fans, power supplies, and

hard drives," Laushman says. "All of these components move, which means they fail far sooner than solid-state equipment. Software monitoring agents that test services and applications, coupled with a rigidly defined schedule of replacement of those components, keeps uptime at a maximum."

According to McDonald, older-style PBX systems generally require more upkeep and maintenance than newer systems, primarily because they have more moving parts. McDonald's VoIP systems are much less labor intensive because they fall under the same maintenance guidelines as the networking equipment used by his company. Further, his telephony equipment is colocated with the other electronic equipment, so it shares the same clean and cool environment—both qualities that help cut down on maintenance.

Wireless & Security

Although routers, switches, and telecom equipment compose the bulk of communications upkeep and maintenance, other devices also demand occasional attention. For example, wireless devices, such as access points, and security devices, such as card readers,

should be included as part of a regular routine to ensure they're running at optimal levels.

"Wireless devices may require software upgrades periodically—more frequently than established routing and switching equipment, such as [devices] from Cisco," Ngim says. "It's important that the administrator stay up-to-date on any patches or fixes."

As for physical maintenance, McDonald says there are few moving parts in wireless devices, so it's important to simply ensure that the environment in which the equipment resides remains within normal operating temperatures. Otherwise, OHC maintains its wireless equipment using monitoring software. "We don't actively visit or do active inspections [of the wireless devices],

partly because they're all installed in out-of-the-way places," McDonald says.

Software upgrades and monitoring software are also crucial pieces of the maintenance regimen for security devices, with upgrades working to prevent operation failures and other problems, and software working to alert administrators to potential trouble with the equipment. McDonald notes that companies already have a built-in monitoring device that alerts them to maintenance issues with security equipment: people.

"People working in [security-protected] areas will notify you very quickly if equipment is malfunctioning and they can't access areas they need to access," he says. [P]

Five Quick Tips

Dale Laushman, founder and CTO of The Uptime Group, gives us five of his most essential tips for keeping up and maintaining communications equipment.

- Test all firmware and software updates before scheduling a live update.
- Have spare parts kits for all moving parts and single-path-of-failure parts for each piece of equipment.
- Plan that something will go wrong during each upgrade and that you will be forced to back out to the original state. That way there will be no surprises.
- Plan maintenance and upgrades during times that are least impacting for your customers.
- Inform the downstream carriers and/or phone company that you work with that you are going to do scheduled maintenance and upgrades before you do them. This makes their jobs easier and keeps them alert for when there really is a problem.

Spic & Span In The Data Center

remove any dust or debris that has built up. This will help improve the efficiency of

your system's fans. Vacuum slowly and methodically, being sure not to insert the tool too deeply into the openings, as you want to avoid damaging any fans. Resist the urge to wipe down your servers and workstations with cleaning cloths. Even with the best wipes, this simply introduces more dust into the air, which invariably gets drawn into your server's air intakes.

Cleaning displays should be done as a two-step procedure: Wipe down the CRT or LCD with a wet cloth and then dry with

Most Important Tip

Many well-intentioned IT managers should take to heart the phrase that is commonly believed to be part of the medical profession's Hippocratic Oath: First, do no harm. Although the inside of a server can appear dirty to the inexperienced eye, it's unnecessary to vacuum the interior of a server or workstation, according to Bill Montgomery of Premier Solutions.

Vacuuming the interior of a computer will remove this dust and debris, but the chance of damaging the computer with static electricity, a banged component, or other accident far outweighs the benefits gained. Instead, focus on the tasks that have the highest risk-to-reward ratio. Carefully vacuuming the external openings clearly delivers the greatest bang for the buck.

an accompanying dry wipe. Care should be taken not to exert too much pressure on an LCD screen, as it may crack.

Keyboards usually suffer from debris that has become embedded between the keys, as

well as dirt buildup on the keys themselves. Vacuuming the keyboard should remove most of the dust and debris, while using the same cleaning procedure as described for displays should help remove dirt buildup on the keys. These procedures also apply to console devices, storage arrays, switches, and other end node equipment.

No Scrubbing Bubbles

Keeping your data center equipment clean is an often overlooked, yet important, task. Clean equipment will operate more efficiently, use less energy, and last longer. Cleaning the end node components of your system isn't an onerous task, just one that requires a suitable level of caution, the appropriate tools, and a modicum of common sense. [P]

Sage Wisdom

When cleaning your servers and other network devices, dust is one of the most detrimental contaminants. Dust clogs air intakes, blocks fan exhausts, and raises internal temperatures if allowed to collect unabated. Periodic cleaning will reduce this to an acceptable level in most data centers; if dust still persists, inform your data center manager that the amount of airborne contaminants is too high.

IT personnel should also be aware of introducing dust as well as other debris into the data center. Unpacking servers and other equipment can introduce dust from cardboard boxes, and Styrofoam from packing materials have a habit of breaking into small, easily spread clumps. Needless to say, IT personnel should never bring food or beverages into the data center.

Product Releases

PHYSICAL

Cabling

■ **Pulizzi Engineering** has released a new line of power cables and accessories that are available in various plug types (straight blade or twist lock connectors) and lengths (from 8 to 15 feet) at prices ranging from $8 to $100. Among the 30 stock set versions available are NEMA 5-15P to IEC C19, NEMA L6-20P to IEC C19, and European Schuko to IEC C19. Standard configurations range in specifications ranging from 120 to 230 volts in 15- and 20-amp current ratings. Additionally, Pulizzi has C13 to C14 jumper cables available in 2- to 12-inch lengths and a new cable accessory strain-retaining clamp for the IEC 60950-type C20 power inlet. The new clamp uses standard cable ties, replacing an older metal clamp method.

COMMUNICATIONS

Content Networking

■ **Kemp Technologies** has launched the LoadMaster LM-2500 balancing appliance with Layer 7 content switching and 1,000 TPS SSL acceleration. The new appliance provides throughput of more than 350Mbps and supports up to 50,000 concurrent Layer 7 sessions and 1 million Layer 4 sessions. The LM-2500 also supports up to 256 virtual and 1,000 real servers. The LM-2500 has a $5,990 MSRP but is available for an introductory price of $4,490 through the end of this month.

Router

■ **Asante Networks** unveiled the FriendlyNET FR204 Series of Internet routers for small businesses. The FR204's routing engine is based on a custom system-on-a-chip to improve throughput, and the routers are designed with a natural firewall that shows only the IP network address of the router. The Secure Packet Inspection feature filters both incoming and outgoing data packets running through the router. The FriendlyNET FR204 has four 10/100 LAN ports, wireless access point (FR204G), and a high-speed 10/100 Internet port. No drivers or specialized startup utilities are required. The router's wireless access point is 802.11b/g-compliant and evaluates the best signal path for transmitting and receiving data.

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■ **Force10's** TeraScale E-Series switch/routers, which feature 10Gb Ethernet architecture, now have integrated SONET/SDH (POS) technology. Service providers who use the Force10 four-port multirate line card can choose from OC-3c/STM-1c, OC-12c/STM-4c, or OC-48c/STM-16c speeds per port. The four-port OC-3c/OC-12c/OC-48c card will be available for $100,000.

Security

■ **D-Link's** new SECURESPOT sits between your computer and your broadband connection and is able to protect connected systems from viruses, worms, Trojans, and even pop-up ads. The SECURESPOT can connect between the broadband modem and a single computer system or between a broadband modem and a router. When connected to a router, the SECURESPOT can protect up to four computer systems. In addition to protecting systems from viruses, SECURESPOT can also block unwanted content from Web sites, known and unknown email senders, specific peer-to-peer applications, and specific IM applications. The SECURESPOT is compatible with Windows 98 and newer, as well as Mac OS X 10.3 and 10.4. The SECURESPOT costs $99.99 and comes with a one-year license for four computers. Extending the license will cost $79.99. Additional computers cost $19.99 a year.

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■ **eIQnetworks** unveiled the latest version of its Enterprise Security Analyzer, designed to satisfy the security intelligence and compliance requirements of MSSP, government, and enterprise customers. ESA 2.5 is capable of processing 15,000 EPS (events per second) on a single server, letting users preemptively reduce security breaches and limit system downtime. The new version supports Oracle and MS-SQL event management and delivers user-definable event and threat-level classifications, over 100 new real-time reports, event/alert playback, and comprehensive regulatory compliance. The ESA 2.5 starts at $7,995 for five devices and five hosts or $25,000 for up to 50 nodes.

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■ The FirePass 1200 is a new SSL VPN appliance from **F5 Networks**. It's aimed at branch offices and SMEs and licensable for 10 to 100 users, who can all enjoy concurrent access. F5's Visual Policy Editor headlines the list of the FirePass 1200's features. The platform supports all SSL VPN access modes, as well as apps such as iNotes, OWA, Windows Files, and Terminal Services.

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Data Protection Priority

Iron Mountain's Suite Secures Your Information

by Cynthia Lazzaro

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BACKING UP AND restoring data efficiently, accurately, and securely is the bane of many IT managers at small to midsized enterprises. Many of these SMEs lack the manpower or financial resources to invest in high-capacity external storage products yet face the same compliance regulations larger companies do.

Iron Mountain's PC Data Protection Suite is a combination of Iron Mountain's Connected Backup/PC data protection and DataDefense. Connected Backup/PC provides automatic backup, encryption for sensitive data, and quick restore to any PC anywhere. DataDefense intelligently encrypts data, monitors for security threats, and can automatically destroy data on a lost or stolen computer based on the number of times an incorrect

password is entered or if the device hasn't connected to the network for a period of time. As an alternative the device can be disabled to prevent access and protect sensitive corporate data.

The integration of these two products creates the Data Protection Suite, which provides enterprise-level control over the PC data protection and recovery process, including providing complete endpoint security.

The PC Data Protection Suite is administered in-house at Iron Mountain, protecting a company's assets both inside and outside the corporate firewall. The Data Protection Suite provides fully automated data protection without impacting daily business activities, requires no special training, and is virtually transparent to end users, thus limiting the amount of time the IT staff spends managing data backup and compliance requirements.

In terms of endpoint security, DataDefender version 2 brings to the suite the ability to provide certificate management and support for multiple users of a single PC providing security yet flexibility. The Connected Backup part of the suite provides security using the highest levels of digital backup security available, including 128-bit AES, which is used for data transmission to the data center, data storage, and when necessary, data recovery.

A number of companies offer similar capabilities. For instance, Availl (www.availl.com) provides continuous backup and delivers real-time continuous data protection and server mirroring. According to its Web site, Availl backs up any number of remote servers to one or more of a company's centrally located systems. However, a small agent must be deployed on existing source servers and backup systems, so in this case the company must provide its own storage. Iron Mountain provides offsite storage as part of the package.

> The PC Data Protection Suite is administered in-house at Iron Mountain, protecting a company's assets both inside and outside the corporate firewall.

A closer competitor would be IBM's Global Services Online Backup for Distributed Servers (www.ibm.com), which also provides offsite data protection, Web-based management, and 24/7 monitoring.

Product Releases

Continued from Page 16

■ **GTA** has introduced the GB-3000 Gigabit Firewall Appliance for SMEs. The appliance is designed to provide security for gigabit networks and supports as many as 12 network interfaces. Of those 12 interfaces, 10 can operate at up to 1Gbps. The appliance comes in a 2U rackmount enclosure with a 3.2GHz processor, dual redundant power supplies, two 10/100 Ethernet interfaces, and two 1000/100/10 TX gigabit Ethernet interfaces. Mini-GBIC expansion is offered, which provides additional configurations for most fiber gigabit form factors. The GB-3000 includes Mail Sentinel Anti-Spam and Mail Sentinel Anti-Virus email filtering, both of which are subscription-based.

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■ **Zeus Technology** and **AEP Networks** have announced a partnership in which AEP Networks will integrate Zeus' ZXTM (Zeus Extensible Traffic Manager) software into AEP's NSP (Netilla Security Platform) appliances and application-layer security gateways. The move aims to provide customers with extended and better scalability to expand remote access to more than 10,000 concurrent users. In addition, Zeus' software provides system reliability and fault tolerance functions. Products from AEP Networks containing Zeus' technology are expected in Q4 through AEP's global channel.

Serial Networking

■ **B&B Electronics** announced two new Ethernet-to-Modbus interpreters designed to connect Ethernet TCP/IP networks to Modbus ASCII/RTU serial devices. Both interpreters come in a compact form factor, measuring 1.25 x 4.5 x 4.75 inches (HxWxD). The units feature a quick-start guide and a step-by-step wizard to ease installation and configuration. The MES1A works with Modbus devices with RS-232 interfaces and the MES1B supports RS-422 four-wire point-to-point interfaces or RS-485 four- or two-wire multidrop bus connections. Both units are available for less than $300 each.

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■ **DCB** has released an MPC (multiport controller) that connects to a host computer and multiplexes messages from peripheral devices. The unit can transmit data to individual devices while receiving data from all device ports at once. Users can individually configure ports for word length, speed, parity, and stop bits via menu commands from the NMP (Network Management Port). Additionally, users can select a message terminate character, a host control character, and XON/XOFF flow control settings. DCB compares the MPC's functionality to the BayTech 528AC11P controller but with additional management features. Prices start at $1,195 for the 8-port MPC-08 model to $4,695 for the 32-port MPC-32 unit. Rackmounts start at $49 for 8- and 16- port units and $59 for 24- and 32-port units.

Storage Networking

■ **Crossroads Systems** added to its NearEdge SAN connectivity family with the 4GB FC NearEdge 7120-b Bridge and the 4GB FC NearEdge 7120 Router. The devices provide conversion from SAN to tape and disk storage. The devices let 4GB Fibre Channel SANs accept SCSI devices. The company also offers the 6000-b NearEdge Fibre Channel storage bridge, as well as the NearEdge 6000 and 6240 storage routers. A resource sharing feature lets users configure and manage up to eight device maps without rebooting. The routers include CVM (Crossroads Visual Manager), which is the Web-based management tool that handles configuration of storage routers.

Telephony

■ **SMC** is shipping one of the first Wi-Fi phones certified for use with Skype. The new WSKP100 ($199.99) provides a way to place cheap or free calls while away from a PC. Unsecured and free WLANs that don't require 802.11 browser authentication are also fair game for a signal. The phone's battery provides three hours talk and 30 hours standby, and it can recharge via USB connection.

END NODES

Printer

■ **Hitachi** announced a new line of products within its PX Series line of small-character inkjet printers. The new line meets the European RoHS Directive by eliminating lead, mercury, cadmium, hexavalent chromium, PBBs, and PBDEs. The PX Series printers have a 10.4-inch color LCD touchscreen, and the new printers' screens are also 25% brighter than previous models. The printers also provide 10 times more contrast with a viewing angle of greater than 50%. The printers' nozzles and gutters are automatically cleaned before shutdown so that the printers are ready to use on startup. The new printers have an IP55-rated stainless steel enclosure to protect it from elements such as dust and water. An IJP-RST1 option is available to provide Ethernet connectivity.

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■ **Lanier** released three new digital MFPs targeted at customers that want to boost productivity and security in departments. The Lanier LD255, LD265, and LD275 offer 1,200dpi, dual-sided scanning at 75ppm, and digital copies/network prints at up to 55, 65, or 75ppm (respectively). The

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Three-Phase UPS Protection

Staco FirstLine Handles Mission-Critical Systems

by Joe Lazzaro

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IF YOU MANAGE A network or data center, guarding against electrical disruptions that may damage your valuable infrastructure is critical. Computers and servers depend on a stable source of electrical power. Defined, uninterruptible power supplies are essentially batteries that sit between your computer and the electrical outlet, shielding against service outages, spikes, sags, surges, and brownouts, preventing loss of data or damage to valuable equipment. Smart organizations are depending on UPSes to safeguard critical systems, letting IT staff power down gracefully or switch to alternate power during an outage or incident.

Staco Energy Products' new FirstLine three-phase UPS units are designed for applications in data centers, broadcast, computer networks, robotics, medical, process industries, wastewater treatment, food processing, and manufacturing plants. The units can provide 10, 15, and 20kVA (kilovolt-amps). According to the company, the FirstLine unit provides computer grade power quality, a small footprint, low weight, and a standard battery run-time of more than eight minutes, with optional batteries for virtually unlimited run time. Staco is planning to offer a sidecar for holding additional external batteries, and the company says this will be about half the size of the base cabinet housing the UPS.

Pricing for the FirstLine product line ranges from approximately $16,000 to $21,000. The least expensive system is a 10kVA Standard unit, which requires a 208/120V input and output, and has a 20-minute internal backup time at 100% load. The most expensive unit offers 20kVA with a K20 rated isolation transformer. It is a 220/127 input and output, providing eight minutes of internal backup time at 100% load.

According to Kim White, Staco Energy Products marketing manager, "Another very attractive feature of the FirstLine UPS is that we have decided to offer a three-year warranty on all the electronics. This is exceptional for the industry, but we are so confident about the FirstLine product that we're willing to back it fully for three years."

According to the company, the major competition for the Staco FirstLine UPS product line comes from MGE's Galaxy 3000 (www.mgeups.com), Chloride's Synthesis Twin (www.chloride power.com), Tripp Lite's Smart-Online 3 Phase System (www.tripplite.com), as well as the 4200 FA Series from Toshiba (www.toshiba.com).

> **Staco's FirstLine unit provides computer grade power quality, a small footprint, low weight, and a standard battery run-time of more than eight minutes.**

SnapShot

Staco Energy Products FirstLine

Starts at $16,000

Provides power ranges of 10, 15, and 20 kilovolt-amps and virtually unlimited run times with user-replaceable batteries

www.Processor.com/Staco2

Product ✍ Releases

systems were designed for ease of use and included such features as easy-to-read font sizes. The LCD touch screen also offers a Simplified Display feature that displays only common options. The devices also include Copy Guard protection, which creates special original documents that, when copied on another Copy Guard device, create unreadable copies. The devices also have scan-to-email, scan-to-folder, and scan-to-FTP features. Customers can also purchase 3,000-sheet finishers that offer 50- or 100-sheet stapling or a saddle stitch finish (which creates books up to 60 pages). Other options include a GBC Streampunch module that handles WireBind and plastic coil finishing or an interposer that adds full-color covers.

Lanier also released two other MFPs: the LD425c and the LD430c, which offer 25 and 30 copies per minute, respectively. The MFPs offer color, monochrome, and mixed copies without reducing output speed. They can print with an equivalent of up to 2,400 x 600dpi and support up to 120-pound index stock. The bypass accepts up to 140-pound index stock, as well as 12- x 18-inch paper. They can scan to URL, folder, FTP, or email and support encrypted PDF transmission. Customers can purchase finishing options such as a 500- or 1,000-sheet finisher that includes a stapling feature.

Server

■ **IBM** introduced the System p5 595 server with a 64-core speed and performance of 4 million transactions per minute. IBM has also added IBM Tivoli UAM (Usage and Accounting Manager) for IT departments and outsourcing companies to monitor and bill usage of server resources. IBM has included Virtualization Engine technology for support of up to 10 virtual servers or partitions per processor core. Other features of the new server include Dual Stress Technology, Tivoli Access Manager for Operating Systems, and IBM Server Consolidation Factory for System p5.

Storage

■ **Addonics'** new Cipher UDD is an external reader/writer that encrypts data in hardware and requires the insertion of an included dongle to access the data. The device connects via eSATA or USB 2.0 and natively reads/writes PCMCIA hard drives and ATA Flash cards. Better still, when used with common adapters, the device can encrypt CompactFlash, Secure Digital, and most other flash memory card formats, plus the Micro Drive. Prices start at $79 for a Cipher UDD with 64-bit encryption. 128-bit models and bundled adapters are available, too.

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■ **Corsair's** Flash Readout USB drive is a typical USB drive with a unique extra: a BCD (bi-stable cholesteric display) on the drive. The display contains an 11-character user-definable label, a pie chart showing used and free space, and the amount of free space available. The new Flash Readout USB drive comes in 1GB and 2GB capacities and includes read speeds of 20MBps and write speeds of up to 7MBps. The flash drive doesn't require any additional drivers when used with WinMe/2000/XP, Linux kernel 2.4 and later, and Mac OS 9/10 and later.

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■ **DPS-Arco** released the eSATA RAID+, a continuous backup device targeted toward the audiovisual, graphic design, and broadcasting markets. Connecting two SATA drives to a system via eSATA, the device uses RAID 1 to back data up to both drives on the fly. This facilitates easy recovery should any drive fail. In addition, one drive can be removed for offsite storage or distribution to a project partner. The eSATA RAID+ operates independently of the OS, so compatibility is broad.

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■ **Emulex** has announced that it now offers 4Gbps HBAs for Intel's Storage System SSR212PP, which is based on EMC AX150 technology. The new products are the LightPulse 4Gbps LPe1150-E

Full Throttle Mobility

Sybase Brings It All Together

by Sandra Kay Miller

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IT DEPARTMENTS HAVE been cobbling together mobile technologies, adding each new one to the pile as they emerge. As a result, interoperability, security, and management issues abound, causing enterprises to look for solutions to bring their individual point solutions under centralized control.

Despite the drive for mobility in the enterprise, companies continue to be cautious in their decision to mobilize business-critical processes and applications onto PDAs and smartphones. However, global enterprise software company Sybase has listened to these concerns, leading it to develop an integrated approach to the often-heterogeneous environment of corporate mobile computing.

To tackle this shortcoming, Sybase launched the Information Anywhere Suite.

Composed of over a dozen different modules covering messaging, device management, security, and application enablement, organizations can now amalgamate their mobile infrastructure under a single secure, scalable mobile software platform.

"Mobile enterprise deployments are evolving from single applications such as email or field services into a strategic part of the core IT backbone," says Terry Stepien, Sybase iAnywhere president.

The four key capabilities of the Information Anywhere Suite address this shift toward weaving mobility into the business

Product ✎ Releases

and the 2Gbps LP101-E HBAs. The HBAs support up to 12 SATA II drives in a 2U rack-mountable enclosure and up to 6TB in a single array. The products are available in both a single- and dual-controller configuration. The LP101-E is a low-profile PCI card that is compatible with either a standard-height or low-profile server slot. The LPe1150-E is a single-channel PCI Express card for SAN environments.

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■ **Mellanox Technologies** announced that Sun Microsystems' Sun Blade 8000 Modular System features Mellanox's 4X InfiniBand Host Channel Adapter. The dual-port HCA is based on the PCI SIG ExpressModule specification and provides dedicated cooling and a single-bulk power supply, making it ideal for server-to-server and server-to-storage applications. The unit also features tool-less installation, hot-plug capabilities, and 10Gbps performance.

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■ **SmartDisk** released a new portable hard drive that has an LCD. The FireLite XPress is available in 60GB and 120GB versions and supports Mac OS 9/X and WinMe/XP without drivers. The drives include BounceBack Express backup software and each drive's LCD can display information about the drive's contents, including the date that data is recorded (and the amount of free space remaining on the drive). The SmartDisk FireLite Xpress 60GB version is available for $199.99 and the 120GB version is available for $299.99.

SOFTWARE

Business Productivity

■ **Configuresoft** boosted its ECM (Enterprise Configuration Manager) with a new module: ECMMX For Assets (ECM Management Extensions For Assets). The software uses wizards to add attributes to hardware and software assets. It tags both assets it discovers and assets that it cannot discover, such as fax machines. It customizes the ECM data repository to the customer's asset management needs. The new module lets it audit security policy adherence, receive alerts about hardware maintenance, and verify software installations.

Graphic Design

■ **Extensis** released an update to its Portfolio DAM (Digital Asset Management) software, which is directed primarily at marketing and creative workgroups. The software, now at version 8.1, offers up organizational, viewing, routing, archiving, and distribution tools. This Universal Application, Mac-only 8.1 update adds native support for Intel-based Mac systems, and it supports single, Client, Server, NetPublish, NetPublish for Server, SQL-Connect, and Browser versions of Portfolio. The update is available via a free download from Extensis' Web site for registered Portfolio 8 users. The desktop version of Portfolio 8.1 for single users sells for about $200. Pricing information for client/server versions of the program is available at Extensis' Web site.

Messaging & Groupware

■ **Microsoft** introduced the second beta version of its Exchange Server 2007 and the first beta release of its Forefront Security for Exchange Server software. Exchange Server 2007 beta 2 features built-in email reliability protections, messaging environment management tools, new mobility features, and unified messaging capabilities. The Forefront Security for Exchange Server beta features coordinated scanning across edge, hub, and mail servers; centralized management of remote installation, engine and signature updating, and reporting and alerts; and it is capable of using up to five antivirus engines to secure all infrastructure layers. The new beta applications are freely available to the public for download.

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■ **TRENDnet** has formed a partnership with Skylook. The partnership will see
Go to Page 20

fabric instead of a bolt-on tool when new technologies emerge.

Supporting major groupware platforms (Microsoft, IBM, and Novell), the Information Anywhere Suite leverages existing installations through its OneBridge technology to provide delivery of email, calendar, contacts, and task applications to virtually any mobile device through a variety of connections, both wired and wireless.

But companies just don't want to mobilize their off-the-shelf systems, they want integration with their enterprise applications, including sales, CRM, ERP, and supply chain databases. Sybase provides the ability to create customized mobile solutions tying into existing data structures and applications such as SAP, Business Objects, and BMC Remedy.

Today's highly mobile enterprise can have thousands of disparate devices scattered throughout the world at any given moment. Through Sybase's Afaria technology, tracking and supporting a mobile workforce of this magnitude is easier thanks to a centralized management console that allows IT to channel system control, user support, policy enforcement, and data flow between headquarters and road warriors.

Clinching the deal for the Sybase suite is the delivery of integrated security. Risks associated with portable devices have long been the big holdup for mobilization in the enterprise. Companies, especially those bound by regulatory compliance, weighing the risks against the benefits, have forgone wireless deployments when faced with the

> ## "Mobile enterprise deployments are evolving from single applications such as email or field services into a strategic part of the core IT backbone."
>
> *- Sybase's Terry Stepien*

complex task of mobile security. Administrators can centrally manage and enforce security through Afaria, as well as through managed security features.

Similar products, such as the Intellisync Mobile Suite (www.intellisync.com), hit the main bases for heterogeneous mobile email delivery, mobile device management, mobile device security, and mobile enterprise application enablement, but Sybase takes enterprise mobility several steps further with specialized modules such as those for RFID, sales, and pharmaceuticals.

For organizations that have been hesitant to mobilize their enterprise, the Sybase Information Anywhere Suite covers all the bases. ▣

Product 🖱 Releases

TRENDnet bundling Skylook's unified messaging software with its own line of Skype VoIP-oriented products. Skylook's software integrates Skype functionality directly into Microsoft Outlook, letting users place VoIP calls to and from contacts in Outlook. TRENDnet also announced plans to launch a new family of wired and wireless handset and conference phone products. Beginning this month, these products will include a free 14-day trial of Skylook's software.

Mobility

■ **Motorola** launched the latest iteration of its MOTOPRO Mobility Suite, designed to allow users to securely access enterprise information from an authorized mobile device. The new version now includes a contextual search function, which lets users access and search structured data sources such as ERP and CRM databases, as well as unstructured data sources, such as email and Word documents. The suite utilizes the Google Search Appliance's OneBox For Enterprise feature to deliver a fast and recognizable search interface to mobile users. The new feature works with Motorola Q smartphones, HC700 rugged handhelds, and other enterprise devices. The contextual search capability should be available in the fourth quarter.

Network & Systems Management

■ **Alterpoint** and **Cendura** announced the Cendura Cohesion Alterpoint Adapter that uses the Cendura Cohesion Adapter with AlterPoint's DeviceAuthority to offer a cross-domain change and configuration management software. The Cendura Cohesion Adapter collects DeviceAuthority's network configuration data to help enterprises and service providers monitor and manage compliance, security, change, and inventory. The Cendura Cohesion Alterpoint Adapter lets customers using both companies' software observe infrastructure changes either in or out of band. The end-to-end configuration management lets customers inventory the network devices that support applications and services, exact configuration settings for managed network devices, and populate CMDBs (Configuration Management Databases) with network asset and configuration information. Once the data is collected, customers can find change and rule violations on a service's configuration.

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■ **Attachmate** announced Verastream Host Integrator 6.0, a screen-based access software for legacy data and logic on mainframe systems. The Verastream Host Integrator increases legacy functionality to applications that interoperate in SOA (service-oriented architecture) and offers flexible application development for ongoing projects. Developers can encapsulate data and logic from the screen interface to create services and components that can be mixed, matched, or reused. IT organizations can extend their legacy assets for use in SOA-based Web, portal, CRM,

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Less Energy, More Memory

SuperMicro's Servers Aim For Efficiency & Reliability

by Daniel P. Dern
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TODAY'S OFTEN-HOTTER servers can build up dangerous "microclimate" heat spots, which forces upgrades to cooling solutions, along with higher utility bills to pump the heat out.

Chipmakers AMD and Intel have been working on more energy-efficient processors, and "Woodcrest," Intel's dual-core Xeon 5100 series processor, is one of these.

Not surprisingly, system vendors, including HP and IBM, have been working on ways to build servers, including higher-power n-way ones and densely packed blade servers, that generate less heat and cool more effectively. Supermicro Computer is helping IT keep its cool and save some change, even as it migrates to new systems based on Intel Woodcrest processors, with its new "earthfriendly" X7 series of chassis and motherboards opti-mized for system performance, energy efficiency, and reliability.

The company recently announced over 30 platforms intended for the Woodcrest chip, including a number of energy-saving and cooling innovations and improved

onto the DIMMs, providing more cooling while minimizing the noise." The new chassis also accommodates more DIMM boards—16—than the previous generation, allowing a chassis to hold more memory.

"It's notable when even a vendor like SuperMicro starts putting effort into energy savings," says Gordon Haff, an analyst at Illuminata, a technology advisory firm. "That's as good an indicator as any that this is a very broad-based, mainstream concern."

For example, SuperMicro's high-density SuperServer 6015B-8+/T+, using Super-Micro's X7DBR-8+/i+ serverboard, can support up to 64GB of DDR2 memory, as well as four hot-swap SCSI/SATA drive bays and a 700-watt power supply, in 1U. This doubles memory capacity and system performance and also lowers energy costs

> ## "It's notable when even a vendor like SuperMicro starts putting effort into energy savings."
> *- Illuminata's Gordon Haff*

thermal reliability, all helping reduce the TCO, according to the company.

"Our new power supplies, which are optimized for Woodcrest, are 85%-plus efficient," says a company spokesperson. "We have modified the chassis with a special teardrop design that funnels more air

while operating at lower temperatures compared to previous generations, according to SuperMicro.

Pricing for a 1U "barebones" SuperMicro X7 system (motherboard, chassis, power supply and cooling, but no CPU, RAM, or hard drive) starts at less than $1,500.

Competition to SuperMicro includes established Tier 1 PC/server vendors such as Dell, HP, and IBM and companies such as Intel, Tyan, and Rackable Systems, according to SuperMicro.

"By designing and building our own power supplies, we can make better overall systems, like a 1U system with more overall power efficiency, and that can take more memory and I/O than most of our competitors," says Don Clegg, senior director of business development at SuperMicro. "You might be able to find something else with the same efficiency level, but it would have a different form factor or be noisier. Our strength is in the component design taking the full system into account."

50% More Storage

Overland's ARCvault Family Boosts Tape Automation Capacity

by Ed Tittel
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IN AN ERA WHEN disk drive capacity is approaching 1TB per unit and where disk arrays routinely manage 2, 4, or 8TB of storage, backup becomes an interesting problem. There can be problems with space, in that many backup systems can't accommodate more than 10TB, and quite a few offer less than half that capacity. There can also be problems with time, especially for full or complete backups, in that time windows available for performing backups may not be wide enough for them to complete before users return to their desks, ready to once again take over corporate networks.

San Diego-based Overland Storage's new ARCvault family can deal with at least half the time and space dilemma. Its new ARCvault 12 Autoloader offers up to 9.6TB of storage capacity in a 2U rackmount form factor, and its ARCvault 24 rack-optimized library doubles that capacity to 19.2TB with the same 2U

footprint. The company also offers removable 12-tape cartridges that fit into add-on tape magazines for both units (the ARCvault 12 handles one of these, while the ARCvault 24 handles two) to permit easy media rotation and easy extraction for offsite media storage.

As is typical with most automated tape systems, both ARCvault units support both LTO-2 or LTO-3 tape drives (but attaining the highest capacities requires the LTO-3 tape drives, rated at typical compression ratios; using

LTO-2 drives cuts rated capacities in half). Both units include a built-in barcode reader, a touch-screen panel for direct control and management, plus remote management through a 10/100 Ethernet interface. The standard data interface is SCSI, where LVD SCSI Ultra 160 is used for LTO-2 drives and LVD SCSI Ultra 320 for LTO-3 drives. Data transfer rates for these units are rated at 187.2 and 374.4GB per hour for LTO-2 drives (for ARCvault 12 and 24, respectively) and at 576GB per hour for LTO-2 drives for both units.

These units' compact form factor and relatively low cost per gigabyte make them strong competitors

> ## Both ARCvault units include a built-in barcode reader, plus remote management through a 10/100 Ethernet interface.

in the small to midsized enterprise market. There, Overland's chief competition comes from companies such as Qualstar, whose RLS-4445 rackmount system tops out at 11TB (www.qualstar.com); Unylogix, whose Spectra 10000 tops out at just over 10.4TB (www.unylogix.com); IBM System Storage TS3100 Tape Library Express, which tops out at 8.8TB or 17.6TB using 2:1 compression (www.ibm.com); and ADIC's Scalar 24 tape library (www.adic.com), the only SME offering we found that matches the ARCvault 24's 19.2TB of capacity, albeit in a 4U package. This puts Overland in a good market position, at least for the time being.

Product ✎ Releases

mobile, contact-center, or Web self-service. Verastream Host Integrator 6.0 features include automated session management and recovery, integration and control of Web-based projects, a debugging tool that shortens the time to create a production-ready project, and model deployment and testing.

Security

■ **AdventNet** released SecureCentral PatchQuest 4.2, automated Web-based patch management software. The software distributes and manages security patches, hotfixes, and updates among networks running Windows, Red Hat Linux, and Debian Linux operating systems. The Secure-Central PatchQuest 4.2 update can scan and patch Windows systems with OSes in 26 different languages. SecureCentral PatchQuest 4.2 also features Web client-to-server communication over HTTPS, provision to use a proxy-server that supports NTLM-based authentication, and improved server startup and system scanning. SecureCentral PatchQuest price starts at $695 for 100 systems and includes an annual subscription fee of $300 and a one-time server fee of $395.

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■ **ElcomSoft's** AINPR (Advanced Intuit Password Recovery) can help Quicken users who forget passwords to specific files. The software supports Quicken versions 4 through 2006, QuickBooks versions 3 through 2006, and Quicken Lawyer. The software supports multilingual passwords, but it does have limitations with specific versions. For instance, in Quicken 2002 and QuickBooks 2003 through 2006, only short passwords are recoverable (although

the software can remove passwords four or more characters in size). For Quicken 2003 through 2006, only dictionary attacks are available.

ElcomSoft also introduced AOPR (Advanced Office Password Recovery). Three different versions of the software are available. The Home version can only recover passwords for Microsoft Word or Excel documents. The Standard edition adds the ability to recover or remove passwords for VBA projects created in Word and Excel, unlock Excel plugins, recover "password to open" passwords for Access, and all Outlook passwords. The Professional edition adds support for recovering Access user-level passwords and all Microsoft Office products. In Word/Excel 97/2000/2003/XP, the software uses brute-force dictionary attacks.

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■ **nCipher** released the updated version of its keyAuthority suite, which handles security and encryption for files and data being accessed by customers, partners, and remote employees. Some of keyAuthority's new features include support for triple-DES and AES key types, on-demand management of keys and end-points, and End Point support for PKCS#11 and Microsoft's Cryptographic API. The goal of the enhancements is to not only secure the IT infrastructure but to secure the data itself, regardless of where it resides or its current life cycle stage.

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■ Version 3.0 of the Skybox View suite is now available from **Skybox Security**. The security risk management software attempts to make it easy for IT personnel to analyze the security of an organization's processes and policies. Compliance, IPS

modeling, and automatic firewall auditing are some highlights. Check Skybox's site for related announcements.

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■ **Sunbelt Software** announced Counter-Spy 2.0 Web Client software to remove spyware from infected PCs through desktop scanning. The CounterSpy 2.0 Active X agent can be deployed from a hardware appliance or other Web-based resource to fix an infected PC. CounterSpy 2.0 Web Client has an Active X scan and remove utility to detect and remove spyware with a temporary client installation. If CounterSpy 2.0 Web Client detects malware, it can quarantine a workstation from the Internet and force a scan and removal of any malware. Based on the configuration, the workstation user will then be redirected to a page that initiates a scan and removal.

Storage

■ **3PAR** released 3PAR MPIO (Multipath I/O) for IBM AIX (which is software for AIX servers that connect to 3PAR InServ arrays). 3PAR also paired its InServ Storage Servers with IBM System p5 servers. The InServ Storage Servers include 3PAR Dynamic Optimization (which can change RAID levels, disk type, and other settings via one command) and 3PAR Thin Provisioning. The IBM System p5 servers include Advanced Power Virtualization and Virtual I/O.

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■ **HT FileStore** has been updated with a new text-based content search capability, BridgeHead Software says. The file archiving software for multiplatform environments now offers browser-accessible search based on Apache's Lucene engine.

One difference from competing systems is that although HT FileStore can search any data, it retains the privacy rights on the data it finds.

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■ **Overland Storage** has announced REO Protection OS 3.0 for the company's REO SERIES disk-based backup appliances. The new operating system provides faster D2D2T backup. The latest version of the software offers faster single- and multistreaming through both iSCSI and Fibre connections. With REO Protection OS, companies can install REO appliances in any existing backup environment without necessitating any configuration changes or adjustments to policies. The software also features a browser-based GUI.

SERVICES

Hosting & Disaster Recovery

■ **EVault** introduced its business continuity consulting management practice, which is designed to minimize the impact of system outages and service interruptions for SMEs. The service's consultants have up to 18 years experience in dealing with outages, crises, and other disastrous events. EVault's consultants build a plan that takes into account the people, processes, environment, and IT systems infrastructure in an attempt to reduce lost productivity, maintain data access, and eliminate the unforeseeable consequences of downtime. The service also conducts walkthroughs and exercises, handles the recovery strategy, and maintains and updates procedures over the course of a business' evolution.

OPINIONS
D A T A • D E V E L O P M E N T S

Is The Microsoft Documentation Team Keeping Up?

This week I planned to write about the European Union and how it's "encouraging" Microsoft to provide more information on the inner workings of Windows Server—about the same way that the IRS encourages people to pay up or lose their homes. But I'm having problems getting to the real issues, at least as far as developers are concerned. Most of my information is from periodicals, and most seem to be parroting the same source. In this latest EU attempt to come to the aid of the losers in the competitive software business, it seems its experts feel that 12,000 some-odd pages of documentation do not provide enough information for the developers wanting to write code that could potentially compete against (or complement) Windows Server and its bundled toolset.

Microsoft says 300 people are working day and night to get this documentation up to spec. Sadly, this work is not to make the .NET Framework documentation better; it's to further document the "current" version of Windows Server. I asked my contacts at Microsoft to comment on this issue, but they have been sworn to silence. An MVP in Europe told me that not all of his co-workers, customers, or associates are happy with the attitude of the EU officials itching to fine Microsoft "up to 10% of their annual revenue."

Documenting The Old Version

A problem with this frenzy to get XP and Windows Server documented is it's really obsolete as far as Microsoft is concerned. While Microsoft is frantically patching these versions as it finds loose bolts in the ceiling plates holding up the roof, its real focus is on making Vista its new OS platform.

Worse, the EU has not told Microsoft what it expects to see as far as bundled components or documentation in Vista. I guess it wants to see the real deal and how many of the little ducklings it's hiding under its skirts will be threatened by the new version before it decides how to react. I guess these timid companies who find trouble competing in an open market don't realize their companies wouldn't exist at all if not for the standard platform established by Microsoft (and the market).

Need: Good Documentation

Frankly, I expect any serious developer can benefit from any additional documentation and information about the inner workings of the OS, even those working at Microsoft on ancillary products like Office, Visual Studio, and SQL Server. I think that the Microsoft documentation provided to developers for Visual Studio and the data access interfaces has gone downhill for a decade. As the OSes and interfaces have grown more complex (only to be constantly replaced by "new and improved" paradigms), the documentation teams seem to be having trouble keeping up. This is totally understandable based on the churn generated by these constant changes.

Having worked on the Microsoft documentation team for five years (and with it for 20 years), I have a pretty good idea how most of the developer documentation is written, especially the data access topics. In the COM-based Visual Basic days (and before), we documentation writers would work closely with the specifications written by the product managers and implemented by the language and data access interface coders to write meaningful help topics, product guides, and examples. We would also document the specific classes, objects, properties, methods and events, and the language topics used to manipulate them. No, coders and PMs rarely wrote clearly enough for most developers—English-speaking or not.

Today, when English might not be a person's first language, the job of the documentation writer is even more difficult. I only assume that the documentation being passed to the EU is in English—heaven help Microsoft if it has to be localized. The localized documentation I saw in the Visual Basic 6.0 timeframe was, well, challenged. I've had European developers say they prefer the English versions as it seemed the translations were made from English to Danish to Hindi to French by people born in Portugal.

Is .NET Framework Any Better?

I talked to an old friend still working at Microsoft, now on the documentation team. She tells me their staff had been cut repeatedly and much of the work farmed out to third parties, while their workload had been increased several fold. Considering that the .NET Framework alone is said to have over 70,000 classes, that's a lot of technology to document—not to mention the N new server server servers it's created lately.

Yes, I think Microsoft needs to make a profit, and I think change is inevitable. But I also think Microsoft needs to completely document what it's created before moving on to the new and improved version of the week. Perhaps if it did, the EU and developers worldwide would not be ranking its documentation as "Unacceptable." 🄿

Send your comments to bill@processor.com

WILLIAM (BILL) VAUGHN

AUTHOR

William (Bill) Vaughn is an industry-recognized author, mentor, and subject-matter expert with more than 30 years in the computing industry as a developer, manager, trainer, marketer, and writer. After 14 years at Microsoft, Vaughn stepped away to work on his new books, in addition to mentoring and leading training seminars. He's written six editions of the "Hitchhiker's Guide to Visual Basic and SQL Server" and two editions of "ADO.NET and ADO Examples and Best Practices for Visual Basic Programmers." He and Peter Blackburn just finished "Hitchhiker's Guide to SQL Server 2000 Reporting Services."

OPINIONS
INFRASTRUCTURE

IT Purchasing Poker

Quite often in this industry the old adage that you get what you pay for is manifest, particularly when trying to save a buck or two on a purchase. But buyer beware, because there are manufacturers and vendors who are not beyond exploiting this belief, intentionally setting their prices higher, just to create a mystique of superiority. So how do you tell when the less expensive option is a bargain and when is it a sham? How do you tell when the more expensive option is really a better purchase and when is it an overpriced wannabe? Is an elaborate product "bake-off" the only way to tell? Nope, not if you're willing to play a little purchasing poker . . .

All In

Allow me to illustrate with a recent example here at Sandhills Publishing. We are trying to purchase a new antispam gateway. Our current system just doesn't cut it anymore, and we are moving forward with some new customer initiatives that will require us to have a bigger, better box than what we have now anyway.

I have looked seriously at no fewer than nine different solutions. Of the nine, I was able to narrow the list to three based on our basic requirements for administration, system capacity, and perceived trust in the technology. Unfortunately, narrowing that list of three to a single choice is proving far more difficult. All three of the remaining products promise essentially the same things, but prices range from about $20,000 to $320,000 up front and anywhere from about $3,000 to $53,000 in annual renewal costs!

The vendors of the less expensive options want to convince us that they can do everything the bigger boxes can for less money, and the vendors of the more expensive options want to convince us that the smaller boxes simply cannot keep up with half of their claims. (Anyone else ever heard these stories before?) But with the extreme price range, I'm leery of all of them!

The vendors' solution is to go "all in." As in, they want me to bring "all" the products, from all the vendors "in" for a big "bake-off," and they will be the first to provide me one of their products to try "absolutely free" for 30 days because they are just that confident we will pick their solution.

On the surface it sounds like a great offer, but to really test an antispam solution for my enterprise means fully implementing an antispam solution for my enterprise! I do not care if the box is here for no cost or not, our time to implement that solution is not free. And the vendors know this. They do not really want a bake-off; they want to be the first product tested, because if it works, they know you will be hard-pressed to justify going through even more work to yank their solution back out, take away some feature the end users now expect, and go through it all again with another unknown product/vendor, all in the name of testing.

MICHAEL DEMPSEY

AUTHOR   *Michael Dempsey is the information technology manager of Sandhills Publishing and technical editor of* Processor *magazine. He has more than a decade of experience in voice and data communications and holds current CCNP and CCDP certifications. Dempsey is an expert in network security, virtual private networks, and IT infrastructure.*

The Card Cam

As exciting as it may be to watch poker players on TV go "all in" and win, it is important to remember their opponents went all in and lost! When my career is involved, I tend to prefer a more conservative approach. Metaphorically speaking, I don't need to go "all in" on a mediocre hand to gauge what the other players have; I only need to bet enough to expose the bluffers.

I place my bet by arranging to test the most cost-effective solution I think I can live with and prepare to follow through with the test. Then I call the vendors of the more expensive solutions and tell them I decided to purchase (note I did not say "test") the less expensive option. Obviously, there will be some initial disappointment believing they just lost the sale, but what happens next can tell you volumes about their real opinion of your decision because they have been in this position before. Every salesman has won some, and lost some, to the vendor you tell them you've selected. Their level of panic at your decision will tell you how many of those sales they lost in the past, how many have come back, and how many were gone for good.

Those that really know the competing product will not last in your environment will begrudgingly accept the news, let you learn the lesson for yourself, and realize they have an easier sale waiting for them down the road when you come back. Those that realize the competing product will actually do what you are hoping will panic and do everything they can to get you to give their product one more consideration before you make the worst mistake of *their* lives. If you learn to read their responses, it's almost like playing poker with the aid of the little card camera the home audience sees!

Send your comments to mike@processor.com

> **Those that realize the competing product will actually do what you are hoping will panic and do everything they can to get you to give their product one more consideration before you make the worst mistake of *their* lives.**

BOOK 📖 REVIEW

Know Your Security Plan

This Handbook Can Keep You & Your Enterprise Out Of Trouble

by Bruce Gain

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MANY IT ADMINS have probably grown tired of the incessant stream of articles and books stating the obvious about the importance of network security. For this reason, "Syngress IT Security Project Management Handbook" might make you think the book represents yet another spin on security with nothing new to say.

Key Concepts

- Organizing your security operations requires an operational framework and a comprehensive plan with many steps and an empirical approach.

- Your organization's security operations should be characterized as the master plan with subcategories ranging from infrastructure to operational security.

- If your network's security operations lack certain standards of care, you could be held liable in the event of an attack.

Instead, "IT Security Project Management" is not so much about security as it is about creating what the author calls "an operational framework" to comprehensively ensure that your network is "secure as humanly possible." This means that while you may have superior skills in network security, your comprehensive plan and its organization must also be in order. Your network's security is only as good as its operational framework; if it's subpar, the consequences can have repercussions that go beyond just losing your job.

Do You Have A Plan?

From the outset, the author takes an empirical approach when describing how to lay the groundwork for a coherent security infrastructure. While assuming the reader is well grounded in IT project management and network security skills, the book begins by outlining how your organization's security operations should be characterized as the "master plan." Different subcategories of this plan range from infrastructure to operational security and are listed as "individual focus areas" or "individual security area project plans."

In the chapter titled "IT Infrastructure Security Plan," the author describes in detail the elements involved in securing your network's infrastructure. The process of assessment is a key element in this chapter, which covers the network's environment, people, and technology. Different threats to your network's infrastructure and how to assess the

> **Your network's security is only as good as its operational framework; if it's subpar, the consequences can have repercussions that go beyond just losing your job.**

risks they pose to your network are analyzed.

Selling Security To Your Boss

Much verbiage is devoted to the risks and legal liabilities of what can happen if your security operations are not in order. Citing statistics from the Computer Economics Group, the book notes how an enterprise that relies heavily on the Internet and network for its business activities with 100 attached devices stands to lose $250,000 from a security breach. For 250 attached devices, the book says, that damage can total $500,000.

While adding a disclaimer that the book is not offering legal counsel, the author details the importance of using the input of an attorney when laying the groundwork for your network's security infrastructure. Legal liabilities that you face, as the book points out, range from noncompliance with a range of laws and statutes to charges of negligence.

If explaining the importance of network security by communicating the financial and legal risks the enterprise faces is not enough, the author offers detailed equations that show you how to quantify a security plan's ROI.

Syngress IT Security Project Management Handbook
Author: Susan Snedaker and Russ Rogers (technical editor)
Publisher: Syngress Publishing
Price: $59.95
Format: Paperback, 656 pages

All 13 chapters and 612 pages are densely packed with information. However, it is the book's level of detail and thoroughness that may be a drawback for some, especially more macro-oriented managers or IT admins who will not have the time or patience to sift through all the chapters. Also, some sections devoted to describing basic network attacks may be too elementary for some. Still, for those seeking a resource for either starting from scratch or re-engineering security operations, the author's erring on the side of thoroughness has resulted in a definitive handbook on which one can rely. ■

CAS Levels The Playing Field

The Pros & Cons Of Content-Addressed Storage

by Tony Bradley

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STORING AND MANAGING data can place a significant burden on computer hardware and software. It is common now for computer systems to come with 250GB or more of hard drive space, and with increased reliance on digital data for storing catalogs of music and pictures, it doesn't take too long to fill hard drives to capacity.

A study done by storage hardware manufacturer EMC in 2000 found that as much as 75% of the data being generated and stored was static data that would most likely never be modified or altered in any way. Data such as photos, medical images such as X-rays, financial statements, or scanned images of cleared checks all represent data that is unlikely to ever change.

Flattening The Hierarchy

The standard system of folders or directories that hold files and other folders or directories can become unwieldy. The locations of each file have to be indexed in a central file database of some sort so that the computer can find them when necessary. A file that is stored three or four levels down requires a long directory path name to locate it, and storing or archiving the data includes a lot of overhead necessary to remember where the file was saved.

Storing static data based on the contents of the file rather than the location of the file emerged as a concept that could make data storage and retrieval more efficient while also providing additional integrity and security for the files. Some refer to this type of storage as a flat file system because it lacks a hierarchical directory structure, but EMC coined the term CAS (content-addressed storage), and it stuck.

Mark Goros, CEO of Caringo, maker of CAStor, explains the need for a shift in how data is stored. "Traditional file systems were invented 30 years ago and were designed to store a few hundred files on a small hard drive (in those days 10 Megs was considered huge). Today, people and companies store millions of files on huge storage devices. Does it make sense to use that same old file system designed for a very different time and for different requirements? No. Traditional file systems are location-based. The fully qualified path is complex and prone to error if even one element of the path changes. If you swap drives, you'll never find your file. CAS gives one ID to each object. That ID is location independent. Wherever your object (file) is stored, the ID can still identify it."

Benefits Of CAS

CAS systems work by computing a unique hash or key for each file based on the actual contents of the file. For regulatory compliance with Sarbanes-Oxley, HIPAA, the Gramm-Leach-Bliley Act, and other mandates, the CAS file system provides a method of validating the integrity of the data. If the data is changed or altered in any way, the key associated with the data would also be changed.

From the perspective of archiving data, the flat file system of CAS allows backup data to use 1/10 of the space of traditional data stored on tapes. The hierarchical structure requires redundant overhead to be stored in order to catalog the path to the proper location of each file. The unique ID associated with each file in a CAS system removes this overhead and reduces the amount of drive space required for backup.

The CAS Market

Some of the main vendors offering CAS products include EMC, Avamar, and Caringo. Microsoft has been pushing to develop a content-addressed storage product as well, but it has run into some hurdles. The Microsoft product, BitVault, has been developed so far by the Microsoft research team but is being moved to a product team as it approaches commercial readiness.

Each product uses an algorithm to assign unique IDs to data and remove the need to trace the directory hierarchy. Goros says, "CAStor is hardware agnostic. It runs on any x86-based platform. It is massively scalable, self managing, self configuring, and self healing. Caringo has a patent-pending, industry-first, transparent, upgradeable hash technique to future-proof your content integrity. Finally, CAStor is an order of magnitude less expensive than competing CAS solutions and never locks a user into a hardware corner."

All the products promise more efficient storage of static content, greater integrity, and reduced drive space. Caringo's CAStor may be attractive to SMEs because it's $500 per drive regardless of drive size. 𝗣

Content-Addressed Storage Vendors

The integrity, security, and efficiency benefits of content-addressed storage have led vendors, including big names such as EMC and Microsoft, to provide products that use the flat file system as opposed to the traditional directory hierarchy. Below is a list of the major CAS vendors and their products.

Vendor	Product	Description	Web Site
Avamar	Axion	Provides a disk-based backup and recovery solution using CAS for faster data restoration and higher reliability	www.avamar.com
Caringo	CAStor	Has a patent-pending, transparent, upgradeable hash technique you can use to future-proof data integrity	www.caringo.com
EMC	Centera	Delivers fast, affordable content-addressed storage from a solid storage vendor	www.emc.com
Microsoft	BitVault	Uses a peer-to-peer based model to store and manage data; not yet available for general use	research.microsoft.com

Top Backup Tips

Experts Tell Their Best-Kept Secrets

by Julie Sartain

• • •

DATA CENTER MANAGERS are always on the lookout for improving their network backup processes. We interviewed just over half a dozen "backup and recovery" experts, that is, companies that specialize in backup and recovery software, hardware, and/or data retrieval services. We asked them to provide us with their best backup tips (as related to speed, costs, and administration), but not just the obvious stuff; we wanted their secrets—those special tips that most people don't consider when developing a backup plan.

Everyone agreed that frequent backups are vital and should be performed daily, at a minimum. They should be monitored, checked, and verified to ensure that all the necessary files are backed up, including the settings and configuration files.

"And if you plan to back up a server," says Carlo Alpuerto, IT manager of Acronis, "remember that you need more than just the OS, applications, and user files—you need all of the configuration files, updates, security patches, and the like."

"In addition," says Peter Carroll, founder and chief technology officer at Data Deposit Box, "be sure to back up the PCs, not just the servers. If you have a traveling executive with a laptop, they are also traveling with data stored on their local hard disk."

Tip #1: Train Multiple Staff Personnel To Perform The Backups

Cross training is the cornerstone for every task in every organization, no matter the size of the company. Why would you back up your data and not the staff who performs those backups? You can't afford to lose a single hour of data, and the person who performs the backups is just as vital as the backups themselves.

"Regular training on your backup software/procedures is a must," says Kevin Harris, CTO of Arnold Communications. "It is important to ensure that more than one person is fully capable of recovering a single file, a server, or entire infrastructure. Lack of knowledge during time of crisis will impact your confidence and ability to recover."

Tip #2: Continuous vs. Scheduled Backups

Database and other file backups are completely different: Databases are dynamic, always changing from minute to minute, while other files only change when they're saved. Continuous backups ensure that your dynamic data is always current.

"Choose continuous backup solutions," says Craig Randall, vice president of operations at Availl. "They eliminate the possibility of data loss between scheduled backups since data is secured as it changes. IT staffs should look for true, continuous backup vs. just preset restore points."

Tip #3: Security

Security is always a crucial issue, especially with backups. You must protect your data from theft, hackers, and spammers and from infection. If you back up a virus, you'll be restoring that virus. Be sure your backups are clean, and consider encrypting your data to protect it from hackers.

"Weekly reports of private data being lost and/or stolen should stop you dead in your tracks, making sure that you are taking all necessary precautions to ensure the security of your backup data," says Harris. "No matter what type of backup you are doing, encrypt it. And remember to manage your encryption keys very well. If you lose them (which is easy to do in a disaster), you've lost access to your backup."

Tip #4: Test Restores Frequently

Our panel of experts agreed that the restoration process should also be tested frequently. "While the daily challenge is to get a successful backup," says Harris, "many people overlook the more important challenge of being able to recover that data. Ensure that your backups are successful by performing restores. Successful restores prove that your backups are truly successful."

Best Tip: Location Is The Most Important Consideration

"Store backup data in a geographically remote location. If you are affected by a disaster, will your backup vendor also be affected? Storing data in a geographically remote location is the 'not so obvious tip.' If your office is destroyed due to flooding, what are the odds your local storage company is also?" says Data Deposit Box's Peter Carroll.

"Establish a relationship with a data recovery company as a part of your overall network backup procedures. At some point, it is likely that you will experience problems with your backup system that will require data recovery. It is best to have your recovery provider selected ahead of time so you don't prolong downtime when disaster strikes," says Jim Reinert, senior director of software and services at Ontrack Data Recovery.

"And for small networks, consider intranet peer-to-peer backup, which leverages free space on your desktop hard drives. P2P backup may be the most cost-effective desktop and laptop backup solution around," says Lakshmanan Narayan, vice president of marketing at Vembu Technologies.

Security Risk Management Is Self-Reliant

Disparate Systems Call For Global DataGuard Measures

by Chris A. MacKinnon

• • •

ARE YOU TIRED of being forced to implement a security posture by cobbling together discrete security appliances and applications from a myriad of competing security companies? If so, you can contact Dean A. Trumbull, chief operating officer at Global DataGuard, a Texas-based SRM (security risk management) company (www.global dataguard.com).

Trumbull says, "There are too many vendors, too many disparate security systems, and not enough actionable root-cause and resolution information. Many products focus on various specific aspects of network security, leaving the IT department responsible for selecting, integrating, managing, monitoring, and correlating discrete security events, alerts, logs, and reports into actionable security threats."

Trumbull believes it takes too long to connect the dots and determine how global threats, network attacks, and vulnerabilities affect network security. He says most security products are reactive and focused on explaining what happened instead of detecting threats before they happen.

Many organizations, already IT security budget-challenged, have a tough time deploying necessary organizational resources to operate successfully. Trumbull says, "This reality is obviously not sustainable in the long run, and there's now a growing consensus that the confluence of security requirements would be better addressed with an extensible systemic architectural approach designed to inherently incorporate all of these disparate applications into a single system, with one single administration/operations console, one set of reports, etc."

Enter SRM

In Trumbull's opinion, the concept of an extensible systemic architectural approach to network security is now gaining traction among leading security companies and industry analysts. He notes that in a recent conference address, Cisco Chief Executive John Chambers predicted the end of pinpoint security applications and noted that to stop online threats, security needs to be integrated throughout the network with an underlying architectural approach and that small to medium-sized enterprises should be focusing now on how their security pieces integrate.

An important aspect of SRM is the realization that signature-only detection is inadequate to address the current state of network security attacks. A behavioral approach to deep packet analysis is now a requirement to address zero-day and other such attacks. Trumbull explains, "At the heart of SRM is a proprietary behavioral correlation engine that is actually the foundation upon which all other applications are built. This basic tenet of SRM enables each security application to leverage the rich data derived from the correlation of weeks of raw packet data, detected vulnerabilities, signature detection applications, posted vendor alerts, globally detected threats, as well as network access policy violations."

Trumbull says it's important to not mistake SRM for SIM (security information management) or SEM (security event management). He says, "A SIM/SEM is nothing more than a noble attempt to integrate a collection of security appliances that were never intended to work together. Consequently, they don't. SRM is not the aggregation of log information from disparate security appliance logs/alerts. The SIM/SEM approach has proved to be a complex, limited, and expensive approach to very loose integration."

In contrast, Trumbull says the SRM suite of truly integrated network sensors, scanners, and behavioral correlation modules are inherently designed to capture, retain, and behaviorally analyze packet-level network traffic, so there is no need to acquire logs and alerts from third-party devices. He says, "After all, relying on logs and alerts from other security devices that are routinely breeched makes relying on a SEM inherently untrustworthy. In addition, SEMs require knowing all present and future events for which rules need to be created."

Trumbull says for those organizations following the widely accepted "defense-in-depth" network security strategy, the SRM

economically delivers a security layer that augments and holistically provides oversight of an organization's security infrastructure without the requirement of up-rooting or disrupting the existing security infrastructure. He says, "This self-reliant approach combines real-time flexibility, long-term correlation, and historical trending, with no maintenance and security business intelligence requirement. The behavioral difference and revolutionary approach is becoming the industry model for next-generation network security."

Challenges Facing SRM

Trumbull says SRM is a relatively new product category, and the work of "category creation" is challenging and expensive. He notes, "At the same time, existing network security incumbents are telling the SRM story but delivering a collection of disparate point solutions that are loosely integrated, usually for reporting purposes. They're standalone signature detection products, separately administered, and they do not share security information in real-time to enhance detection. This is creating confusion with customers who quickly realize that what they're saying and what they're delivering are two different things."

To address industry challenges, Trumbull says Global DataGuard is working to educate industry analysts to better understand the unique underlying behavioral analysis and correlation engine required to enable the sharing of information between security applications and disciplines. He says this behavioral foundation enables true integration and is the primary distinction that lies at the heart of the SRM architectural approach and provides all security applications the behavioral edge.

Trumbull says the company is also trying to promote the virtues of the SRM architecture, which provides an extensible platform to incorporate ever expanding security applications. He says Global DataGuard has already leveraged the SRM architecture to incorporate several new security applications coming to market later this year, including behavioral NAM (network access monitoring), firewall and syslog monitoring, as well as antivirus, antispam, and content filtering applications.

Trumbull says what makes the SRM architecture so different and so much more effective is the way Global DataGuard's approach overlays and complements an existing network security infrastructure. The modular architecture lets customers mix and match applications to leverage their current investment and then add additional application modules incrementally and over time.

This summer Global DataGuard is introducing NSZ (network security zones), a network access control and monitoring capability (the industry's first NAC solution that's based solely on behavioral network analysis and correlation). With this solution, Trumbull says there is no need to install centralized network authentication equipment or install host-based agents on clients and no need to rearchitect the network to accommodate in-line security devices.

TWO TERMS

▌ CAS (content-addressed storage)

What it is: CAS is a storage technology that uses a document's content as the primary indicator of the document's location. Traditional storage technologies, to pinpoint the location of a document or file, refer to the physical location of the document or file, that is, location-addressable storage. CAS is a way to index the storage of documents according to content. But there is a caveat: CAS works best with documents that don't change often, such as permanent records required by regulations.

Why you should care: If your business manages a large number of records required by regulations such as Sarbox and HIPAA, CAS is a technology you might want to keep your eye on because it is specifically designed to manage those types of records. Also, if your business creates lots of permanent records that must be intelligently stored and archived, CAS may be for you.

Related products and manufacturers: Manufacturers and products include EMC (Centera family of CAS systems), Permabit (Compliance Store), and HP (StorageWorks Reference Information Storage System).

▌ DR (disaster recovery)

What it is: Disaster recovery is the practice of preparing and implementing plans for protecting business data and systems in the case of a natural or manmade disaster. DR consists of the procedures, plans, backup software, hardware systems, and management practices that, combined, represent the business strategy for coping with and mitigating unplanned, catastrophic events.

Why you should care: If you don't pay attention to the possibility of a disaster, you are playing with fire. Recent hurricanes, wildfires, flooding, and the ever-present possibility of terrorist attacks should clearly emphasize to businesses the importance of DR planning and implementation. This is especially true for businesses that must comply with the plethora of regulatory requirements today; poor DR planning will not be an acceptable excuse for the loss of compliance records that regulations require.

Related products and manufacturers: DR services providers include Forsythe (Business Continuity/Disaster Recovery IT Advisory Solutions), GE (Disaster Recovery Services), North American Access Technologies (Mobile Emergency Datacenter), Delphire Group, and COOP Consulting.

Next Week In *Processor* . . .

Coming In Our August 11 Issue:

Take time for yourself with expert tips to build your professional career and a discussion of the IT certifications and experience most in demand. We also take a look at what data center/IT experts can do to help users cope with technology changes and training services to help.

You'll also find:

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- New trends in disaster recovery
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- How to detect Skype and similar programs on your network

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Manufacturer Presentation

Software - Network & Systems Mgmt. Advertisement

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Software - Storage Advertisement

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Services - Storage Advertisement

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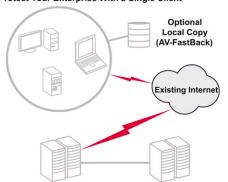
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Manufacturer Presentation

Protection For Transportation Of Hard Drives

Perm-A-Store now provides Turtle Cases for popular Hard Drive configurations
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As hard drives become more portable, users are looking for safe and efficient ways to transport and store drives with live data. These specialized cases are made of high-density polyethylene, a rugged, lightweight material that provides excellent impact protection. All Turtle cases are available with optional brass padlocks, which may be keyed alike at no extra cost.

These new Turtle hard drive cases are available in several configurations:
• One or two precut slot(s), manufactured to the exact dimensions of the unit to be transported
• Customizable configuration for one or two drives - employs pluckable dense foam cubes that can be removed to securely fit drives of various sizes.
• The configuration shown on the right of the photo above is 10 drives placed in pre-cut foam slots in a rugged, two-handle case with 6 butterfly latches.

Turtle cases were introduced in 1988 and have become the media transport standard because they deliver protection against impact, debris and temperature and humidity extremes.

Turtle Cases are also available for all tape formats (LTO, DLT/SDLT, 3590, 3592, 9840/9940, 8mm, AIT, VXA 4mm as well as CD/DVD and optical media). Various capacities and colors by format.

Turtle brand transport and storage cases are recommended by media manufacturers Imation, IBM and Sun/StorageTek because they provide specialized protection for data media.

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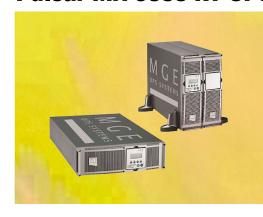
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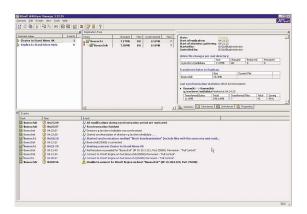
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